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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,331	11/18/2003	James M. Ralph	279	5238

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EXAMINER

RHEE, JANE J

ART UNIT PAPER NUMBER

1745

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/716,331

Applicant(s)

RALPH ET AL.

Examiner

Jane Rhee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/8/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claims 12, 27 are objected to because of the following informalities: A= needs to be changed to A'. There is no antecedent basis for A=. Examiner thinks it's a typo. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-26, 28-32, 34, 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Ralph et al. (Electrochemical society journal).

As to claims 1, 17 and 28, Ralph et al. discloses a solid oxide fuel cell comprising an anode and a cathode separated by a solid electrolyte (page 466 paragraph 1), the cathode including an A and/or A' site deficient perovskite of general formula of $(A_{1-x}A'_x)_{1-y}FeO_{3-\delta}$ or of general formula $(A_{1-x-y}A'_xFeO_{3-\delta})$, wherein A is La alone or with one or more rare earth metals or a rare earth metal other than Ce alone or a combination of rare earth metals and X is in the range of from about 0 to about 1; A' is Sr or Ca or mixtures thereof and Y is in the range of from about 0.01 to about 0.3; δ represents amount of

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compensating oxygen loss, and wherein if either A or A' is zero the remaining A or A' is deficient (page 469 paragraph 1 wherein the formula is $\text{La}_{0.8}\text{Sr}_{0.2}\text{FeO}_3$).

As to claim 2, Ralph et al. discloses that X is in the range of from 0.1 to about 0.4 (page 469 paragraph 1 wherein the formula is $\text{La}_{0.8}\text{Sr}_{0.2}\text{FeO}_3$). As to claim 3, and 23, Ralph et al. discloses that A' is present in the range of from about 0.15 to about 0.30 (page 469 paragraph 1 wherein the formula is $\text{La}_{0.8}\text{Sr}_{0.2}\text{FeO}_3$). As to claim 6 and 20, Ralph et al. discloses that A is at least 60% La (page 469 paragraph 1 wherein the formula is $\text{La}_{0.8}\text{Sr}_{0.2}\text{FeO}_3$). As to claim 7 and 21, Ralph et al. discloses that A is substantially all La (page 469 paragraph 1 wherein the formula is $\text{La}_{0.8}\text{Sr}_{0.2}\text{FeO}_3$). As to claim 8 and 22, Ralph et al. discloses that A' is Sr (page 469 paragraph 1 wherein the formula is $\text{La}_{0.8}\text{Sr}_{0.2}\text{FeO}_3$).

As to claims 4, 5, 18-19 wherein A is La and or more of Ce, Pr, Nd, Sm, Gd and Y, perovskite by definition contains rare earth metals, therefore the perovskite claimed by the applicant inherently contains rare earth metals such as Ce, Pr, Nd, Sm, Gd and Y.

As to claim 9, wherein that A and/or A' site deficiency is in the range of from about 5mole% to about 30mole% and As to claim 10 and 24, wherein A and/or A' site deficiency is in the range of from 10 mole% to about 20mole%, since Ralph et al. discloses the general formula desired by the applicant, it is inherent that A and/or A' site deficiency is in the range of from about 5mole% to about 30mole% and from 10 mole% to about 20mole%.

As to claim 11, 26, 31 Ralph et al. discloses wherein the area specific resistance is less than about 0.2 ohms.cm^2 at 800 degrees C (page 472 paragraph 3).

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As to claim 27,32,36, Ralph et al. discloses wherein A is at least 60% La and X is in the range of from about 0.1 to about 0.4 and A' is Sr (page 469 paragraph 1 wherein the formula is $\text{La}_{0.8}\text{Sr}_{0.2}\text{FeO}_3$).

As to claim 13, 34 Ralph et al. discloses that the perovskite is substantially single phase (page 467 paragraph 3).

As to claim 14, Ralph et al. discloses that the perovskite functions as an anode or a cathode adjacent to and in contact with a solid electrolyte (page 468 figure 1).

As to claim 15, Ralph et al. discloses that perovskite is in the form of a membrane and further includes mechanism for establishing an oxygen partial pressure gradient across the membrane (page 468 paragraph 1).

As to claim 16, Ralph et al. discloses that the perovskite is in the form of an electrode in combination with an oxygen ion conducting membrane (page 468 paragraph 1).

As to claim 29 and 30, Ralph et al. discloses that the electrolyte is yttria stabilized zirconia (page 467 paragraph 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 12,33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ralph et al. in view of Nishihara et al. (5604048).

As to claim 12,33 Ralph et al. disclose wherein A is at least 60% La present (page 469 paragraph 1 wherein the formula is $\text{La}_{0.8}\text{Sr}_{0.2}\text{FeO}_3$) but fail to disclose that La is present at about 0.6mole fraction and A' is Sr present at about 0.25 mole fraction. Nishihara et al. teaches that La is present at about 0.6mole fraction and A' is Sr present at about 0.25 mole fraction (col. 3 lines 5-30) for the purpose of providing a novel electrically conducting ceramic having improved electrical conductivity (col. 2 lines 61-63).

Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide Ralph et al. with La that is present at about 0.6mole fraction and A' is Sr present at about 0.25 mole fraction in order to provide a novel electrically conducting ceramic having improved electrical conductivity (col. 2 lines 61-63) as taught by Nishihara et al.

4. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ralph et al. in view of Ruka et al. (5916700).

As to claim 35, Ralph et al. fail to disclose a stack of plurality of solid oxide fuel cells wherein each fuel is separated from an adjacent fuel cell by an interconnect material and at least some of the cells are connected in series. Ruka et al. teaches a stack of plurality of solid oxide fuel cells wherein each fuel is separated from an adjacent fuel cell by an interconnect material and at least some of the cells are

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connected in series for the purpose of providing a generator chamber in which power generation occurs (col. 3 lines 2-6).

Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide Ralph et al. with a stack of plurality of solid oxide fuel cells wherein each fuel is separated from an adjacent fuel cell by an interconnect material and at least some of the cells are connected in series in order to provide a generator chamber in which power generation occurs (col. 3 lines 2-6).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jane Rhee whose telephone number is 571-272-1499. The examiner can normally be reached on M-F 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Jane Rhee

March 16, 2006



PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER